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Dairy Herd Improvement Letter

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NATIONAL COOPERATIVE
DAIRY HERD IMPROVEMENT
PROGRAM
A dairy recordkeeping plan
for every herd

- Average Predicted Differences From Winter 1979 Through Summer 1980 Sire Summaries
- Requirements for Calculation of a Sire Summary
- Errors, Reasons for Termination, and Types of Test for 305-Day Lactation Records Received for the Summer 1978 Through Winter 1980 Sire Summaries

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Dairy Herd Improvement Letter

AVERAGE PREDICTED DIFFERENCES FROM WINTER 1979 THROUGH SUMMER 1980 SIRE SUMMARIES

By M. Grossman[1] [2] and G. R. Wiggans[1]

The averages of Predicted Differences (PD's) of bulls summarized in 1979 and 1980 point out the continued improvement in average PD's of bulls in active artificial insemination (AI) service and emphasize the importance of using bulls with higher PD's each year.

Dairymen have long been advised to use bulls with the highest PD's they could afford in their breeding programs. Dairymen who wish to use above average active AI bulls must keep increasing the level of service sire PD's as the genetic level of the population improves. The PD's in the Sire Summaries are expressed relative to a fixed genetic base established in 1974 from records having a calving date from 1960 through 1974, with the average date of calving about 1968. Under this fixed base, sire PD alone is not enough to determine if a bull is above average; the PD of the average bull also must be known.

Table 1 presents the average PD's for milk (PDM) in pounds, milk fat percentage (PD%), fat (PDF) in pounds, and dollars (PD$) for bulls summarized in winter and summer 1979 and 1980 by breed. The PD's, except for the PD$, are comparable over years; PD$ is comparable only within years because different milk prices were used to calculate PD$ each year. Economic weights were derived from the prices by computing the value of a pound of milk without fat and the differential value of a pound of fat. The value for fat reflects the value of its related components.

For the Winter and Summer 1979 (W79 and S79) Sire Summaries, the national average milk price used was $10.40 per hundredweight of milk having 3.5 percent fat. The differential was $0.128 for each change of 0.1 pound of fat per hundredweight of milk; this converts to an economic weight of $1.28 per pound of fat in the milk. The economic weight for milk without fat was

$$\$10.40/\text{cwt milk} - (3.5 \text{ pounds fat/cwt milk})(\$1.28/\text{pound fat}) = \$0.0592/\text{pound milk}$$

Thus, for W79 and S79, PD$ = $0.0592 PDM + $1.28 PDF.

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Table 1.--Average Predicted Difference (PD) for milk (PDM) in pounds, milk fat percentage (PD%), fat (PDF) in pounds, and dollars (PD$) for bulls in Winter and Summer 1979 (W79 and S79) and Winter and Summer 1980 (W80 and S80) USDA-DHIA Sire Summaries by breed[1]

Breed	Summary	All bulls[2]					Active AI bulls[3]					Non-AI bulls				
		Number	PDM	PD%	PDF	PD$	Number	PDM	PD%	PDF	PD$	Number	PDM	PD%	PDF	PD$
Ayrshire-----	W79---	298	+25	0.00	+1	+3	17	+534	-0.02	+19	+56	243	-20	+0.01	0	-1
	S79---	285	+34	.00	+1	+3	20	+570	-.02	+20	+59	230	-26	+.01	0	-2
	W80---	301	+65	.00	+3	+9	16	+568	-.03	+19	+64	244	+19	.00	+1	+3
	S80---	279	+73	.00	+3	+9	17	+603	-.03	+21	+69	235	+17	.00	+1	+3
Guernsey----	W79---	760	+88	-.01	+3	+9	42	+703	-.06	+27	+76	600	+21	-.01	0	+1
	S79---	767	+101	-.02	+3	+10	42	+749	-.07	+28	+80	613	+36	-.01	+1	+3
	W80---	709	+115	.00	+5	+15	39	+727	-.06	+28	+87	570	+52	+.01	+3	+8
	S80---	691	+159	-.02	+6	+19	44	+785	-.08	+29	+92	543	+81	-.01	+3	+10
Holstein-----	W79---	8,900	+92	-.03	-1	+4	667	+880	-.07	+21	+79	6,734	-26	-.02	-4	-7
	S79---	10,483	+116	-.03	0	+7	686	+928	-.06	+24	+86	7,913	+2	-.02	-3	-4
	W80---	9,453	+177	-.03	+2	+14	725	+977	-.06	+27	+102	7,188	+50	-.02	-1	+2
	S80---	10,389	+194	-.03	+3	+17	723	+1,040	-.06	+29	+109	7,718	+58	-.01	0	+4
Jersey-------	W79---	952	+246	-.06	+7	+24	94	+859	-.16	+28	+87	703	+138	-.04	+3	+12
	S79---	1,053	+305	-.07	+9	+30	86	+982	-.17	+33	+100	783	+204	-.05	+6	+20
	W80---	1,013	+310	-.06	+10	+34	89	+985	-.17	+33	+111	765	+210	-.05	+6	+22
	S80---	1,038	+376	-.08	+12	+42	90	+1,015	-.18	+34	+115	776	+273	-.06	+8	+29
Brown Swiss-	W79---	368	+221	-.02	+7	+22	46	+788	-.05	+25	+79	267	+124	-.01	+4	+12
	S79---	402	+222	-.02	+6	+21	46	+782	-.05	+25	+78	301	+142	-.01	+4	+14
	W80---	349	+272	-.02	+8	+29	45	+803	-.06	+25	+83	256	+182	-.01	+6	+20
	S80---	367	+300	-.03	+9	+32	40	+911	-.06	+29	+101	274	+211	-.02	+6	+22
M. Shorthorn	W79---	194	+280	+.02	+12	+32	11	+865	+.02	+34	+95	148	+276	+.02	+12	+32
	S79---	104	+456	+.02	+19	+51	12	+794	+.02	+31	+87	78	+431	+.02	+18	+49
	W80---	116	+499	+.02	+20	+61	12	+903	+.02	+35	+109	93	+469	-.02	+18	+56
	S80---	120	+585	+.01	+23	+71	11	+985	+.02	+38	+118	97	+549	+.02	+22	+67
All breeds---	W79---	11,472	+110	-.03	0	+7	877	+857	-.06	+22	+79	8,695	0	-.01	-2	-3
	S79---	13,094	+134	-.03	+1	+9	892	+908	-.05	+25	+86	9,918	+27	-.02	-2	-1
	W80---	11,941	+188	-.03	+3	+17	926	+950	-.05	+27	+100	9,116	+71	-.02	0	+5
	S80---	12,884	+210	-.03	+4	+19	925	+1,011	-.05	+29	+108	9,643	+85	-.02	0	+6

[1] For W79 and S79, PD$ = $0.0592 PDM + $1.28 PDF; for W80 and S80, PD$ = $0.0653 PDM + $1.42 PDF.

[2] Includes AI bulls not active, active AI bulls, and non-AI bulls.

[3] Includes only bulls designated active after each summary.

For the Winter and Summer 1980 (W80 and S80) Sire Summaries, higher prices increased the economic weights; therefore, PD$ = $0.0653 PDM + $1.42 PDF. The increase in prices had little effect on the ranking of bulls by PD$ because the relative importance of PDM and PDF remained almost constant over the 2 years. For the 1979 summaries, the ratio of weights for PDF to PDM was 1.28/0.0592 = 21.62; for the 1980 summaries, the ratio was 1.42/0.0653 = 21.75.

For all bulls, the average PDM and PDF for each breed increased from the W79 through the S80 Sire Summary. The average PD$ increased in 1979 (except for Brown Swiss) and again in 1980 summaries. The average PD% either decreased slightly or remained unchanged.

For AI bulls designated active after each summary, the average PDM and PDF for each breed increased since the W79 Sire Summary. For the first time, the average PDM in the Holstein and Jersey breeds exceeded +1,000. The average PD$ increased in 1979 (except for Brown Swiss and Milking Shorthorn) and again in 1980 summaries. The average PD% changed only slightly, if at all, over summaries.

For non-AI bulls, the average PDM and PDF increased for each breed since the W79 Sire Summary. The average PD$ increased in 1979 and 1980 summaries, except for the Ayrshire breed. The average PD% changed only slightly, if at all, over summaries.

The average PD's in table 1 point out the importance of using AI bulls. In the Holstein breed, for example, the average PDM, PDF, and PD$ in the S80 Sire Summary for active AI bulls exceeded those for non-AI bulls by 982 pounds of milk, 29 pounds of fat, and $105. Over all breeds, the rates of improvement since winter 1979 in average PDM, PDF, and PD$ are greater among active AI than among non-AI bulls.

Dairymen who use AI need to be especially alert to the opportunity provided by the increase in average PD's. In the Holstein breed, the average PDM increased 160 pounds and the average PDF increased 8 pounds since the W79 Sire Summary; the average PD$ increased by $7 in 1979 and again by $7 in 1980. Thus, dairymen should increase their selection criteria by at least these amounts in order to continue using bulls of the same or greater relative superiority.

REQUIREMENTS FOR CALCULATION OF A SIRE SUMMARY

By Rex L. Powell and George R. Wiggans[1]

Genetic evaluations of dairy bulls are computed semiannually by the Animal Improvement Programs Laboratory (AIPL). A bull is summarized and that summary released when the amount of daughter information in the summary first meets AIPL requirements. Bulls are then resummarized when there is a substantial amount of new information or an identified need. By selectively summarizing bulls, AIPL is able to provide sire summaries on bulls of interest while controlling costs.

The procedure to determine which bulls to resummarize was substantially changed for the Spring 1976 Sire Summary. Changes since then have been minor.

Requirements

Usable records.--Daughter records are the primary source of information for summarizing bulls. A record can be used if it (1) has not been eliminated because of errors, conflicts, or missing data; (2) has at least one usable herdmate record; and (3) is for at least 15 days in milk if the cow was removed from the herd or 40 days in milk if it is a record in progress (RIP). "Usable daughters" are daughters with at least one usable record.

Birth date.-- Summaries will not be computed for bulls born before 1959. Any bull that lacks birth-date information must have an average year of calving for first lactation daughters of at least 1965. A daughter list and sire summary (DHIA Form 1202) will not be provided to the owners of bulls over 9 years of age unless they are reported active or in progeny testing by an artificial insemination (AI) organization. Summaries on all bulls, however, are included on sire summary lists and tapes. This restriction substantially reduces the mailing of information that is generally of little interest.

Ties to population.--A few bulls that meet other requirements for summary will not be summarized because their daughters have few or no contemporaries sired by bulls used in multiple herds. The Modified Contemporary Comparison (MCC) Sire Summary is based on comparing bulls with each other. For Predicted Difference (PD) to be reliable, some of the competing sires must appear in other herds. An average Repeatability for sires of modified contemporaries of at least 25 percent is required for a bull to be considered suitably linked with the general population for calculating a summary.

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Initial summary.--A bull will be summarized automatically the first time he has 10 or more usable daughters. Summaries on bulls with fewer daughters are computed to aid in evaluating other bulls by providing information as herdmate sires, but these summaries are not released.

Resummary.--Bulls will be resummarized if they qualify under one of the following five conditions:

1. Active or progeny-test status with an AI stud.
2. Unconditional summary status.
3. Seventy percent or more RIP's among first lactation daughters in the previous summary and at least as many daughters in the current summary as were in the previous summary.
4. Conditional summary status and meets requirements for increase in either daughters or records as given in table 1 under columns headed "Conditional."
5. Meets requirements for increase in either daughters or records as given in table 1 under columns headed "Normal."

The AIPL staff decides which bulls are granted conditional or unconditional summary status. A bull owner may request conditional status for a bull of interest that may not meet normal requirements for new information on progeny. Unconditional status is primarily for research and internal use.

Bulls of obvious current interest are resummarized regardless of amount of added daughter information (conditions 1, 2, and 3). Bulls approved for a conditional status are resummarized with less new data (condition 4) than are other bulls (condition 5). The table shows that requirements are more lenient for bulls having more than 20 percent RIP's among first lactation daughters in the previous summary.

Table 1.--Percentage increases in number of daughters or records for a bull to be resummarized for combinations of numbers of daughters and percentages of first lactation records that were in progress (RIP) in the previous summary (normal or conditional summary status)

Number of daughters in previous summary	Percentage of first lactation RIP's in previous summary	Percentage increase in-- Number of daughters Normal	Conditional	Number of records Normal	Conditional
10-99----------------	> 20----------	10	10	20	10
	≤ 20----------	15	10	25	15
100+ ----------------	> 20----------	20	15	30	20
	≤ 20----------	25	20	80	40

Discussion

The criteria for resummary limit the size of the complete sire summary lists by eliminating bulls that are of little interest or that have little new information. These standards should provide summaries on bulls that have the most bearing on current decisions in the dairy industry.

These requirements were used for the Summer 1980 Sire Summary. Details such as minimum birth dates and perhaps minimum percentage increases in table 1 can be expected to change. The birth dates will probably increase annually by at least 1 year. The amount of information required for releasing initial summaries also may be increased. The possibility of more stringent requirements emphasizes the advisability of wide initial sampling.

ERRORS, REASONS FOR TERMINATION, AND TYPES OF TEST FOR 305-DAY LACTATION RECORDS RECEIVED FOR THE SUMMER 1978 THROUGH WINTER 1980 SIRE SUMMARIES

By George R. Wiggans[1]

The Animal Improvement Programs Laboratory (AIPL) receives lactation records on cows in production-testing plans of the National Cooperative Dairy Herd Improvement Program (NCDHIP). The types received are (1) in-progress, (2) 305-day (includes terminated records less than 305 days), and (3) greater than 305-day records. The third type is collected for research but not used in genetic evaluations. In-progress records, which provide information on a cow's production early in lactation, are subsequently replaced by 305-day records. Only information on 305-day records is included in this report.

Testing plans are classified as official or nonofficial. Official plans require that a supervisor record lactation production according to Official Dairy Herd Improvement Rules.[2] Nonofficial plans are less expensive and provide less service than official plans. Records from nonofficial plans are not used in national sire evaluations. However, some of these records have the cow's sire identified and therefore could contribute to the sire's evaluation. Weights and edit limits specific for each nonofficial plan could be imposed to properly combine nonofficial and official records.

Tables 1 and 2 give the number of records excluded from summaries by State.[3] Counts from summaries for a summer and the following winter are combined because they represent records received during 1 year. Among official records, missing sire identification is the major reason that records are excluded. The number of records received from different States may substantially exceed the number of cows on test because (1) the same lactation is represented by more than one record when corrected records are submitted or (2) a cow completed two 305-day records in one 12-month period. Different editing practices by the processing centers also affect the proportion of unusable records.

The number of 305-day records that are actually used in sire evaluation is not available because records in progress are combined with the remaining 305-day records

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[2] Coordinating Group for the NCDHIP. Official Dairy Herd Improvement Rules. 1977.

[3] The author acknowledges the assistance of G. J. King, E. F. Myers, and S. M. Hubbard of this laboratory in compiling the data for the tables.

Table 1.--Disposition of 305-day records by State for the Summer 1978 and Winter 1979 Sire Summaries

State	Number of records			Number of official records eliminated owing to[2]--			Remaining records[3]	
	Total	Nonofficial[1]	Official	Unusable	Error	Missing sire	Number	Percent
Ala.------	26,267	2,147	24,120	212	24	16,366	7,518	31.2
Alaska[4]--	564	484	80	0	16	0	64	80.0
Ariz.-----	41,011	2,650	38,361	1,120	3,127	25,198	8,916	23.2
Ark.------	12,998	4,898	8,100	1,074	14	3,066	3,946	48.7
Calif.----	401,717	31,328	370,389	21,872	11,260	214,649	122,608	33.1
Colo.-----	26,772	3,940	22,832	644	2,163	9,232	10,793	47.3
Conn.-----	24,513	2,270	22,243	0	10	6,874	15,359	69.1
Del.------	4,422	422	4,000	1	0	1,345	2,654	66.4
Fla.------	37,623	23,613	14,010	364	132	7,390	6,124	43.7
Ga.-------	46,018	12,956	33,062	559	11	20,556	11,936	36.1
Hawaii---	7,937	3,438	4,499	652	89	2,799	959	21.3
Idaho[4]----	46,901	3,612	43,289	1,421	7,278	22,085	12,505	28.9
Ill.--------	115,791	7,752	108,039	2,703	1,100	20,188	84,048	77.8
Ind.-------	58,413	5,451	52,962	671	98	21,601	30,592	57.8
Iowa------	114,411	33,183	81,228	4,896	126	34,839	41,367	50.9
Kans.-----	55,396	6,124	49,272	2,324	121	20,110	26,717	54.2
Ky.-------	29,488	3,039	26,449	312	16	13,528	12,593	47.6
La.-------	28,184	134	28,050	358	13	16,530	11,149	39.7
Maine----	25,034	3,537	21,497	0	12	5,344	16,141	75.1
Md.-------	49,440	3,061	46,379	1,073	3,511	16,875	24,920	53.7
Mass.-----	18,511	1,556	16,955	0	13	3,668	13,274	78.3
Mich.-----	107,715	10,577	97,158	5,988	462	43,206	47,502	48.9
Minn.-----	255,068	86,629	168,439	7,432	52	61,604	99,351	59.0
Miss.-----	20,852	479	20,373	188	6	13,495	6,684	32.8
Mo.-------	57,971	9,757	48,214	4,635	35	22,620	20,924	43.4
Mont.-----	6,801	1,024	5,777	519	2,471	912	1,875	32.5
Nebr.-----	33,864	3,130	30,734	2,139	38	15,528	13,029	42.4
Nev.------	8,678	1,257	7,421	626	1,042	4,581	1,172	15.8
N.H.------	13,230	1,938	11,292	0	4	2,505	8,783	77.8
N.J.------	15,394	290	15,104	0	5	4,245	10,854	71.9
N. Mex.--	22,611	1,899	20,712	530	3,127	9,910	7,145	34.5
N.Y.------	331,804	141,997	189,807	7	121	47,715	141,964	74.8
N.C.------	65,046	3,228	61,808	818	51	32,013	28,926	46.8
N. Dak.---	8,903	1,522	7,381	885	6	3,174	3,316	44.9
Ohio------	108,178	23,690	84,488	2,170	3,474	27,923	50,921	60.3
Okla.-----	30,113	2,579	27,534	3,251	13	15,175	9,095	33.0
Oreg.[4]----	54,745	4,339	50,406	482	8,989	21,253	19,682	39.0
Pa.--------	239,009	71,624	167,385	2,662	17,358	20,865	126,500	75.6
R.I.-------	1,277	0	1,277	0	0	492	785	61.5
S.C.-------	28,941	1,362	27,579	396	58	15,623	11,502	41.7
S. Dak.---	28,745	15,232	13,513	913	3	6,525	6,072	44.9
Tenn.-----	44,602	33	44,569	358	15	27,232	16,964	38.1
Tex.------	56,077	5,795	50,282	791	70	29,837	19,584	38.9
Utah------	32,255	2,472	29,783	1,674	4,342	13,893	9,874	33.2
Vt.--------	59,943	14,969	44,974	0	31	11,738	33,205	73.8
Va.-------	82,414	1,992	80,422	927	71	31,037	48,387	60.2
Wash.[4]---	121,215	14,927	106,288	646	19,257	51,561	34,824	32.8
W. Va.----	11,737	289	11,448	0	6	3,883	7,559	66.0
Wis.------	454,377	216,733	237,644	2,784	6,913	92,485	135,462	57.0
Wyo.------	2,939	0	2,939	220	1,321	616	782	26.6
P.R.------	19,280	0	19,280	335	9	17,153	1,783	9.2
All States	3,495,195	795,348	2,699,847	81,632	98,484	1,131,042	1,388,689	51.4

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[1] Includes invalid identification correction code.

[2] Records were checked sequentially for conditions included in the following groups: Unusable--missing production (termination code 9), test herd, early or missing birth or fresh date; error--invalid cow, sire, or dam identification, conflicting or invalid cow, sire, or dam breed, invalid days in milk, blanks for other required information, missing or grade sire or dam when cow identification has a 00 prefix (presumed registered); missing sire--no sire identification for records not excluded in error. The number of records missing sire identification may include records submitted for previous summaries that had an invalid sire identification not detected earlier.

[3] Combined with in-progress records and compared with previously received information. Additional records are excluded because of conflicts. Counts of these conflicts are not reported because they include records in progress.

[4] For States with records processed at the Washington center, 66,698 records were resubmitted to correct errors but are not included in tables 4 and 5.

Table 2.--Disposition of 305-day records by State for the Summer 1979 and Winter 1980 Sire Summaries

State	Number of records			Number of official records eliminated owing to[2]--			Remaining records[3]	
	Total	Nonofficial[1]	Official	Unusable	Error	Missing sire	Number	Percent
Ala.	26,397	2,062	24,335	225	3	16,311	7,796	32.0
Alaska	487	353	134	69	2	0	63	47.0
Ariz.	52,346	3,103	49,243	1,147	2,012	33,192	12,892	26.2
Ark.	14,148	4,632	9,516	2,007	72	3,152	4,285	45.0
Calif.	467,136	38,848	428,288	19,631	8,057	247,661	152,939	35.7
Colo.	34,111	5,717	28,394	845	1,943	11,886	13,720	48.3
Conn.	26,566	2,817	23,749	26	9	7,545	16,169	68.1
Del.	4,983	564	4,419	9	0	1,451	2,959	67.0
Fla.	41,312	27,996	13,316	518	107	7,255	5,436	40.1
Ga.	48,955	14,687	34,268	725	14	20,720	12,809	37.4
Hawaii	8,487	2,943	5,544	236	183	3,698	1,427	25.7
Idaho	48,646	4,140	44,506	4,044	2,120	25,684	12,658	28.4
Ill.[4]	132,103	9,310	122,792	5,969	583	26,041	90,199	73.5
Ind.	57,150	6,068	51,082	562	80	19,953	30,487	59.7
Iowa	128,053	34,784	93,269	8,913	669	37,719	45,968	49.3
Kans.	58,683	6,320	52,363	3,523	426	20,394	28,020	53.5
Ky.	30,052	3,397	26,655	597	10	13,497	12,551	47.1
La.	28,099	161	27,938	376	12	16,612	10,938	39.2
Maine	26,987	4,297	22,690	12	18	5,359	17,301	76.2
Md.	56,256	3,889	52,367	1,042	1,553	13,130	36,642	70.0
Mass.	20,148	2,093	18,055	20	11	3,927	14,097	78.1
Mich.	161,377	47,731	113,646	5,579	543	51,528	55,996	49.3
Minn.	294,883	98,796	196,087	10,926	49	69,897	115,215	58.8
Miss.	21,585	287	21,298	257	3	14,021	7,017	32.9
Mo.	65,679	9,794	55,885	6,395	335	24,290	24,865	44.5
Mont.	7,808	1,285	6,523	460	2,877	1,153	2,033	31.2
Nebr.	36,153	3,018	33,135	2,680	199	16,657	13,599	41.0
Nev.	9,712	1,081	8,631	706	1,124	5,190	1,611	18.7
N.H.	14,577	1,901	12,676	20	5	2,868	9,783	77.2
N.J.	15,356	621	14,735	10	7	4,058	10,660	72.3
N. Mex.	23,787	192	23,595	1,438	1,370	12,407	8,380	35.5
N.Y.	375,223	163,455	211,768	224	134	53,555	157,855	74.5
N.C.	67,793	3,704	64,089	873	29	32,403	30,784	48.0
N. Dak.	11,354	1,478	9,876	1,597	106	4,176	3,997	40.4
Ohio	121,054	26,473	94,581	3,304	2,781	29,663	58,833	62.2
Okla.	29,368	2,031	27,337	4,081	194	13,553	9,509	34.8
Oreg.	49,450	4,776	44,674	663	602	23,929	19,480	43.6
Pa.	260,835	76,832	184,003	3,137	2,736	39,419	138,711	75.4
R.I.	1,255	25	1,230	0	0	389	841	68.4
S.C.	30,183	1,652	28,531	444	17	16,156	11,914	41.8
S. Dak.	31,947	16,475	15,472	1,843	95	6,843	6,691	43.2
Tenn.	46,437	20	46,417	432	7	27,899	18,079	38.9
Tex.	63,468	5,972	57,496	1,033	19	34,783	21,661	37.7
Utah	36,949	2,037	34,912	2,461	3,683	15,965	12,803	36.7
Vt.	66,927	16,704	50,223	29	32	13,277	36,885	73.4
Va.	83,720	2,005	81,715	1,075	32	30,045	50,563	61.9
Wash.	105,623	13,825	91,798	1,171	1,229	58,740	30,658	33.4
W. Va.	13,060	499	12,561	14	2	4,361	8,184	65.2
Wis.	556,311	259,696	296,615	10,054	9,170	113,330	164,061	55.3
Wyo.	3,506	11	3,495	216	982	1,039	1,258	36.0
P.R.	18,689	0	18,689	282	30	16,464	1,913	10.2
All States[5]	3,935,174	940,557	2,994,617	111,900	46,276	1,273,245	1,563,195	52.2

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[1] Includes invalid identification correction code.

[2] Records were checked sequentially for conditions included in the following groups: Unusable--missing production (termination code 9), test herd, early or missing birth or fresh date; error--invalid cow, sire, or dam identification, conflicting or invalid cow, sire, or dam breed, invalid days in milk, blanks for other required information, missing or grade sire or dam when cow identification has a 00 prefix (presumed registered); missing sire--no sire identification for records not excluded in error. The number of records missing sire identification may include records submitted for previous summaries that had an invalid sire identification not detected earlier.

[3] Combined with in-progress records and compared with previously received information. Additional records are excluded because of conflicts. Counts of these conflicts are not reported because they include records in progress.

[4] Includes 49,617 records resubmitted to correct herd codes but are not included in tables 4 and 5.

[5] Includes 41,166 resubmitted records on cows milked 3 times a day.

before checking for conflicts with other data. Based on earlier years when counts for these conflicts were available separately for 305-day records, approximately 3 percent of the remaining records were eliminated because of these conflicts. The counts shown document the number of records not suitable for evaluating bulls for the most frequent reasons of exclusion and permit comparison of the reasons over years.

Table 3 summarizes tables 1 and 2 for some of the more important dairy States. The percentage of errors and missing sire identifications changed little over the 2 years for most States. For Pennsylvania and Washington, the percentages changed significantly. These changes appear to have occurred because some instances of missing sire identification were reported in 1978 as blanks rather than zeros. These records were identified as having errors instead of missing sire identification. Maryland was included in table 3 because there was substantial improvement in the percentage of records remaining over the 2 years. Both errors and missing sire identification decreased. An unusually large proportion of records processed for the Winter 1979 Sire Summary had missing sire identification, possibly because of correction of earlier incorrect sire identification.

Table 4 gives the distribution of records by processing center and type of testing plan. DHI was the predominant plan; however, recently adopted official plans are gaining in popularity. Only the Iowa center had reported DHIR-APCS (alternate component sampling) records as of the Winter 1980 Sire Summary, but this plan has had increased enrollment since that time. The Illinois center discontinued processing records in 1978. Records from Illinois herds are now processed at the Iowa center. USDA processing center entries include corrected records reported through sources other than the processing centers. The large number of records for the Summer 1979 Sire Summary were submitted to correct a problem with records from 3X milkings. There has been a

Table 3.--Official 305-day records and proportion excluded by reason for the 10 States with the most records and Maryland

State	Summer 1978 and winter 1979			Summer 1979 and winter 1980		
	Records	Error[1]	Missing sire	Records	Error	Missing sire
	Number	Percent	Percent	Number	Percent	Percent
Calif.--------	370,389	3.0	58.9	428,288	1.9	57.8
Wis.----------	237,644	2.9	38.9	296,615	3.1	38.2
N.Y.---------	189,807	.1	25.1	211,768	.0	25.3
Minn.--------	168,439	.0	36.6	196,087	.0	36.6
Pa.-----------	167,385	10.4	12.5	184,003	1.5	21.4
Ill.-----------	108,039	1.0	18.7	122,792	.5	21.2
Mich.--------	97,158	.5	44.5	113,646	.5	45.3
Ohio---------	84,488	4.1	33.0	94,581	2.4	31.4
Wash.--------	106,288	18.1	48.5	91,798	1.4	64.0
Iowa---------	81,228	.2	42.9	93,269	.7	40.4
Md.----------	49,440	7.6	36.4	52,367	3.0	25.1
All States---	2,699,847	3.6	41.9	2,994,617	1.5	42.5

[1] Sire identification reported as blanks included in error instead of missing sire.

Table 4.--Number of 305-day records by processing center and testing plan received for the Summer 1978 through Winter 1980 Sire Summaries

Processing center	Total number of records	Number of records by testing plan[1]											
		Official					Nonofficial						
		DHIR[2]	DHI	DHI-APCS	DHI-AP	Total	AP-SS	OS	OS-AP	MOR	Comm	Other[3]	Total
						Summer 1978 and winter 1979[4]							
Calif.	180,275	14,173	146,084	0	0	160,257	0	0	0	0	20,018	0	20,018
Ill.	35,446	4,957	26,124	0	0	31,081	0	3,822	0	0	0	543	4,365
Iowa	420,835	33,551	307,629	1,255	249	342,684	3,285	68,899	0	0	5,739	228	78,151
Mich.	107,714	7,045	90,112	0	0	97,157	0	9,242	373	0	575	367	10,557
Minn.	255,047	9,375	158,898	28	117	168,418	1,214	82,491	2,047	0	876	1	86,629
N.Y.	505,875	37,130	301,469	0	0	338,599	74,010	59,888	10,058	17,379	5,941	0	167,276
N.C.	545,371	52,540	407,462	17,689	981	478,672	163	16,094	526	27,649	17,741	4,526	66,699
Pa.	238,962	8,338	159,000	0	0	167,338	39,549	24,909	7,166	0	0	0	71,624
Utah	579,465	96,846	422,666	0	0	519,512	0	36,687	0	5,491	17,775	0	59,953
Wash.[5]	139,822	15,645	108,253	0	333	124,231	3,205	7,038	2	31	5,312	3	15,591
Wis.	454,221	33,948	203,695	0	0	237,643	15,471	200,606	0	501	0	0	216,578
USDA	417	305	112	0	0	417	0	0	0	0	0	0	0
Total	3,463,450	313,853	2,331,504	18,972	1,680	2,666,009	136,897	509,676	20,172	51,051	73,977	5,668	797,441
						Summer 1979 and winter 1980[6]							
Calif.	211,996	17,578	166,407	0	36	184,021	0	0	0	0	27,975	0	27,975
Iowa	456,110	44,782	318,612	4,567	1,562	369,523	5,317	74,633	0	0	6,637	0	86,587
Mich.	160,767	8,385	104,900	0	0	113,285	0	41,643	1,618	0	3,003	1,218	47,482
Minn.	294,148	11,703	182,158	347	1,380	195,588	0	88,158	9,603	0	799	0	98,560
N.Y.	565,077	40,799	331,299	0	0	372,098	89,947	58,880	8,162	17,710	18,280	0	192,979
N.C.	557,086	50,179	394,051	40,889	3,328	488,447	0	13,169	1,855	47,247	6,368	0	68,639
Pa.	260,280	8,998	174,282	0	202	183,482	43,375	25,447	7,976	0	0	0	76,798
Utah	690,722	120,528	503,609	0	1,323	625,460	2,618	39,825	152	5,232	17,395	40	65,262
Wash.	137,692	14,840	104,928	0	584	120,352	2,509	7,076	355	986	6,414	0	17,340
Wis.	554,296	43,020	252,260	0	0	295,280	19,032	239,344	0	640	0	0	259,016
USDA	5,810	563	4,299	157	0	5,019	13	433	3	271	71	0	791
Total	3,893,984	361,375	2,536,805	45,960	8,415	2,952,555	162,811	588,608	29,724	72,086	86,942	1,258	941,429

[1] DHI = Dairy Herd Improvement; R = Registry; AP = AM-PM; CS = Component Sample; SS = Supervisor-Sampler; OS = Owner-Sampler; MOR = Milk Only Record; and Comm = Commercial.

[2] Includes DHIR-APCS.

[3] Includes bimonthly and trimonthly sampling plans and invalid codes.

[4] Includes 34,953 records from other countries.

[5] Excludes 66,698 corrected records.

[6] Includes 49,593 records from other countries.

Table 5.--Number of official 305-day records by processing center and reason for termination received for the Summer 1978 through Winter 1980 Sire Summaries

Processing center	Total number of records	Number of records by reason for termination[1]									
		Dry or 305-day (0)	Interval > 75 days (1)	Changed herd (2)	Culled because of problems with--				Died (7)	Abortion (8)	Missing production (9)
					Production (3)	Reproduction (4)	Udder (5)	Other (6)			
					Summer 1978 and winter 1979[2]						
Calif.	160,257	118,841	1,121	1,839	8,612	2,943	2,863	6,519	1,796	1,742	13,981
Ill.	31,081	22,081	92	2,138	3,596	1,064	782	657	431	93	147
Iowa	342,881	234,017	2,512	21,985	8,483	3,393	3,163	44,680	2,192	692	21,764
Mich.	97,157	68,576	0	1,485	9,023	2,625	1,375	6,733	1,190	170	5,980
Minn.	168,418	122,709	342	10,301	10,148	4,878	4,719	5,695	1,637	566	7,423
N.Y.	338,599	256,064	1,242	19,351	57,594	0	0	0	2,761	1,587	0
N.C.	482,901	383,323	2,898	11,374	29,335	15,271	11,504	14,644	6,430	1,841	6,281
Pa.	167,338	132,177	0	4,090	13,867	6,211	5,397	2,667	1,300	503	1,126
Utah	519,512	397,559	0	10,333	67,678	8,910	6,896	9,311	9,958	2,490	6,377
Wash.	124,231	98,556	0	2,580	6,076	2,231	1,498	10,579	1,571	454	686
Wis.	237,643	172,931	9,079	7,226	41,722	0	0	0	3,088	825	2,772
USDA	417	388	0	13	5	4	0	2	1	3	1
Total	2,670,435	2,007,222	17,286	92,715	256,139	47,530	38,197	101,487	32,355	10,966	66,538
					Summer 1979 and winter 1980						
Calif.	184,021	140,556	889	2,392	10,184	3,532	2,598	7,517	2,180	2,175	11,998
Iowa	369,523	246,684	4,928	16,813	15,082	6,698	8,219	28,409	5,693	856	36,141
Mich.	113,285	81,895	0	2,299	9,668	3,207	1,876	7,325	1,245	200	5,570
Minn.	195,588	141,723	1,128	13,196	10,166	5,214	4,926	6,002	1,696	641	10,896
N.Y.	372,098	307,651	0	13,412	0	0	0	47,214	2,399	1,072	350
N.C.	488,447	387,479	3,536	12,865	27,499	15,435	11,248	14,641	6,283	2,232	7,229
Pa.	183,482	148,942	0	4,300	12,650	6,087	5,474	2,688	1,338	579	1,424
Utah	[3]624,137	493,951	0	13,280	71,361	8,364	7,095	9,145	8,744	2,295	9,903
Wash.	120,352	90,655	6,579	2,161	4,856	2,104	1,309	10,053	1,500	377	758
Wis.	295,280	216,379	7,790	9,352	46,500	0	0	0	4,315	923	10,021
USDA	5,019	3,960	45	73	331	111	92	220	80	49	76
Total	2,951,232	2,259,875	24,895	90,143	208,297	50,752	42,837	133,213	35,473	11,381	94,366

[1] Corresponding termination codes are in parentheses.

[2] Bimonthly nonofficial records are included for North Carolina (4,229) and Iowa (197).

[3] Does not include 1,323 DHI-AP records.

substantial increase in the number of records from Michigan, particularly in the nonofficial plans. Some of the increase in the official plans may result from records being resubmitted to correct a problem in reporting days in milk.

Table 5 gives the number of official records by processing center and reason for termination. The reason for termination determines whether a record is projected. Records ending with a dry date or 305 days are not projected. Records are not used that have incomplete production information because production recording did not start with the fresh date or the interval between samples was more than 75 days (termination code 9). Records terminated for any other reason are projected.

Reasons for culling cows have not been reported uniformly. The New York and Wisconsin centers have not distinguished among culling reasons, reporting all cull cows as being culled because of low production.

Differences among centers also occur when a test interval greater than 75 days occurs. Centers should terminate such records on the sample day prior to the long period and designate the reason for termination as code 1. If the record for the entire lactation spanning the long interval is reported, termination code 9 should be used.

Records with missing production (termination code 9) usually are not reported by the New York center.

Nearly 75 percent of the records end because the cow went dry or reached 305 days. Two to three percent are deleted because of missing production information; the remaining 22 to 23 percent require projection to 305 days to be used in sire evaluations.

The totals in tables 4 and 5 will match the totals in tables 1 and 2 if the numbers in the footnotes are considered.

The potential contribution of nonofficial plans to sire evaluation was studied with records received for the Winter 1980 Sire Summary. Counts by type of missing information, similar to the counts in tables 1 and 2, for two popular nonofficial plans are in table 6. In both plans, the percentages of records with sire information were smaller than in official plans. The sire-identified records would be useful in the national program, particularly if they provided more information on sires with low repeatabilities.

Table 6.--Number of records by reason not usable for Supervised AM-PM (AP-SS) and Owner-Sampler (OS) records for the States with the most records submitted for winter 1980

State	Total number of records	Number of records not usable because of-- Missing production	Missing sire	Missing dates	Remaining records Number	Percent
			AP-SS			
N.Y.---------	48,275	0	27,142	0	21,133	43.8
Pa.----------	23,663	153	19,939	7	12,564	53.1
Wis.---------	9,974	1,020	7,365	0	1,589	15.9
All States---	90,091	1,620	51,363	7	37,101	41.2
			OS			
Wis.---------	123,307	14,280	77.527	0	31,500	25.5
Minn.-------	46,371	4,583	25,712	0	16,076	34.7
Mich.-------	22,486	1,669	16,840	0	4,577	20.4
N.Y.--------	22,213	0	10,380	0	11,833	53.3
Iowa--------	14,110	1,536	9,942	2	2,630	18.6
All States---	296,994	24,867	182,454	31	89,642	30.2

Summary

The official 305-day records provide the basic information for the genetic improvement program. Only properly identified records can contribute to genetic evaluations. There is considerable opportunity to obtain more information from the testing program through more accurate identification in records. Other errors can be reduced by more careful checking of information before sending it to AIPL.

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